CALIFORNIA ENERGY COMMISSION
Peak Load Reduction Program
Telemetry and Storage
North Kern Water Storage District Project Summary

Encompassing nearly 60,000 acres, the North Kern Water Storage District is located in the San Joaquin Valley portion of Kern County. The district receives water from the Kern River and groundwater supplies. The District funded two projects:

- Project 1: Addition of reservoirs and modification of groundwater pumping wells
- Project 2: Installation of telemetry equipment and modification of groundwater pumping wells

Project Descriptions:

Telemetry site near the head of Calloway Canal

Project 1: Storage reservoirs were constructed and used to supply water to users during the peak period, allowing groundwater pumps to be turned off. Older well casings were lined to prevent casing failure. Timers were installed on each well control panel in the program to automatically shut the well off during the peak period. This project shifted about half of the groundwater wells off peak.

Project 2: After a year, the District decided it was possible to shift a majority of the remaining wells if water storage was increased and a telemetry system installed, allowing them to more effectively monitor their distribution system. Project 2 accomplished this. Wells were equipped with clock timers, turning the wells off before 12:00 p.m. and back on after 6:00 p.m. In addition, older wells were rehabilitated to withstand frequent start-ups, and modifications were made to the pump discharges, reducing the impact of operation to the landowners. A siphon, pumping bays, and weirs were then installed to increase the storage capacity of regulating reservoirs, thereby reducing the peak period electrical demand. Finally, seventeen telemetry sites were installed to monitor water levels and provide data via radio to the office computer.

Project Results:

The District has two major supply sources, the Kern River and groundwater. When deliveries from the Kern River are below normal, the District must supplement using groundwater pumps. In 1992, the deliveries from the Kern River most closely matched deliveries during 2001, the post-project verification year. Therefore, the District used power usage records for 1992 for their baseline pre-project peak load. Post-project and pre-project time-of-use meter billings for the pumps (within the scope of the project) were compared to verify load curtailment through the peak period.

PROJECT 1		PROJECT 2	
Total Project Cost	$532,623	Total Project Cost	$1,334,130
Total Grant Award	$346,205	Total Grant Award	$813,750
Actual Kilowatt Reduction	5,135	Actual Kilowatt Reduction	3,255
Grant Payment per Kilowatt Reduction	$67.42	Grant Payment per Kilowatt Reduction	$250

Lessons Learned

The clock timers were installed during the off season when the wells were not operating. Manual verification that the timers were shutting off before 12:00 p.m. and turning back on after 6:00 p.m. during the weekday peak periods was vital, ensuring avoidance of errors occurring during initial programming of the timers. Improper operation would cause increased power bills and be detrimental to the verification of peak load reduction.

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